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ABSTRACT

Divided into three chapters, this manual suggests career-related activities designed to be infused in the standard school curriculum, K-12. Chapter 1 provides an overview of career education, including a rationale and outline of the eight basic elements accepted by the federal Office of Education. Chapter 2 explains what is meant by career infusion and suggests various processes and methods career educators utilize at three levels of schooling (primary grades--career awareness; intermediate grades--career exploration; and secondary grades--career preparation). Finally, chapter 3 presents examples of strategies for classroom infusion in the following subject areas: English, social studies, mathematics, science, music, art, and foreign language. For each subject there is a one-page rationale followed by a series of suggested activities, organized according to the eight elements of career education. A master chart is included highlighting certain elements which are particularly suitable to certain subjects. A chart showing the relationship of school subjects to the United States Office of Education career clusters and a draft of the Massachusetts Career Education Objectives are appended. An annotated bibliography is also included, and the entries are organized under the eight career education elements; there is also a section on materials of general interest to career educators. (BM)

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Career Education Infusion: Strategies for the Classroom

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CAREER EDUCATION INFUSION:
STRATEGIES FOR THE CLASSROOM

by

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and

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February, 1978

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Chapter I

Overview of Career Education

- In Huntington a tenth grade English class spends two weeks preparing career projects, individual typed reports on occupations students have chosen to investigate in the school's Occupational Resource Center. After the reports are completed, the whole class travels to nearby Westfield for a day on the job, shadowing real workers in the occupations chosen.

- In Boston an eighth grade social studies class sets up and runs a simulated business, using game currency but keeping real financial records. Students experience and discuss the details of business transactions and company management. With their teacher they consider the possibilities of careers in economics and business.

- In Pittsfield a fourth grade art class spends three sessions creating individualized mobiles, collages or me-boxes using materials brought from home (pictures, mementos, etc.). The art teacher and the regular teacher collaborate in the project and encourage students to use art to explore themselves -- family, hobbies, interests. Self-awareness is a part of the career development sequence.

For the last seven years, educators have been talking about career education and trying to integrate it with existing classroom practice. In Massachusetts, as elsewhere, teachers have explored a vareity of ways of approaching career education. Teachers at all grade levels and across all subject areas have begun to take career development concepts and infuse them into the regular classroom curriculum. Their work, though largely unrecognized by professional curriculum developers, is often inspired, original and highly successful, as the above examples illustrate.

It is the purpose of this publication to provide some suggestions for career infusion, subject by subject, in hopes that teachers will be able to develop their own strategies for infusion. It is the further aim of the following pages to familiarize others -- principals, employers, work-education council members -- with career infusion concepts. Only with their help will career education succeed in the schools.

Why Career Education?

Career education broadly represents the idea that schools should pay attention to what kids know about work. More specifically, it has as its central purpose the improved employability of young people who leave the schools (secondary and post-secondary) and enter the work force. Throughout this century, an ever-increasing

number of people have become wage earners, in a labor market characterized by rapid changes in skill requirements, job descriptions and geographical distribution of job locations. These changes in the scope and complexity of the labor market have presented increasing challenges to young people beginning a career. For the past seventy-five years, public schools have responded to the challenge by making one attempt after another to prepare youth for the transition from education to work. Career education is simply the latest in a series of efforts in this area.

Career education has a long history, and has appeared in a number of guises. Around 1900, a psychologist named Frank Parsons wrote and spoke about "vocational guidance," a process of matching people with jobs. A few years later, a number of educators, businessmen and even a few union leaders began the "industrial education" movement culminating, in Massachusetts, with a governor's report on high school training for industry (1906). Ten years later, as an outgrowth of both these themes, the concept of "vocational education" was finally accepted by Congress as the basis for the Smith Hughes Act (1917). Still later, "cooperative education" became a popular name for the method of part-time schooling, part-time apprenticeship which allowed vocational students to apply on the job the theory and skills they were learning in school.

For the next forty years as high school enrollments increased and as job market changes continued, support for vocational education continued to grow. New trades were added, and there was a trend toward increased state support. In a related development, several psychologists began to conduct research on career development patterns, but little of this work made its way into educational programs. It was not until the 1960's that the federal government initiated new education-for-work programs, with "work-study" and with amendments to the original vocational education act.

All these developments, along with a growing concern for the state of the American economy, led in the early 1970's to a new federal initiative, dubbed by Education Commissioner Sidney Marland "career education". The new program was intended to be broader than any previous one, to reach more students in more grades and prepare them for more occupations. By this time the government had catalogued some 20,000 job titles, many more than had existed at the beginning of the century. It was Marland's idea that schools should familiarize students with clusters of occupations and help them make career decisions and develop job skills appropriate to careers of interest to them. And the federal government has since funded this concept with millions of dollars in grants and contracts.

Career education is seen by many present-day educators as simply another confusing title to add to a long list: "work-study", vocational education, "career guidance", and so forth. To deal with the confusion, some career education advocates stress the differences between their program and all previous programs, especially vocational education. Career education is for everyone, while vocational

education is for the few. Career education stresses values, attitudes and decision-making while vocational education emphasizes technical skills. There are, of course, important differences in philosophy, methods and objectives. But the commonalities are at least as important as the differences in understanding and implementing career education. This new program shares with its predecessors a common aim -- preparation of young people in school for the paid jobs they can expect to hold as adults.

The Eight Elements of Career Education

Career education programs are generally grounded in a developmental theory of careers. The assumption is that as a person matures, he or she progresses in sequence through identifiable stages of career development. While writers suggest various stage names and distinctions, most agree on the stage process.

In this career infusion guide we will be following the stage sequence currently accepted by the federal Office of Education. It consists of eight elements, as outlined below.

1. Self-Awareness

   Self-Awareness refers to the knowledge of self that will enable an individual to make career decisions. This element includes the following abilities:

   - to relate one's interests, aptitudes and achievement to career aspirations
   - to accept responsibility for uniqueness of self
   - to understand past and future personal growth
   - to recognize the environmental forces which influence one's development
   - to understand the relation of self to values
   - to understand the importance of personal goals based on self-knowledge

2. Educational Awareness

   Educational Awareness is the perception of the relationship of education to one's careers and life roles. This element includes the following abilities:

   - to understand that learning occurs both in and out of school
   - to recognize education as part of career preparation

- to recognize that different careers need different kinds of educational preparation

3. Career Awareness

Career Awareness refers to an understanding of paid work and the relationship between work and one's life career decisions. This element includes the following abilities:

- to understand career clusters (grouping of occupations with similar characteristics)
- to understand the relationship of careers to social and economic institutions
- to identify the characteristics of various careers
- to understand that "career" involves progressive stages of preparation
- to understand the relationship of one's career to one's lifestyle

4. Economic Awareness

Economic Awareness refers to the perception of the relationship of economics to one's life career decisions. This element includes the following abilities:

- to relate one's career to one's lifestyle
- to recognize the social and economic constraints on career choice
- to recognize the value of non-occupational activities
- to relate personal economic status to social structures

5. Decision Making

Decision Making refers to a rational process of career choice. This element includes the following abilities:

- to relate career goals to the process of making career decisions
- to identify and select alternatives

6. Beginning Competency

Beginning Competency refers to the skills necessary in the performance of tasks related to one's career. This element includes the following abilities:

- to identify work objectives, specify resources, outline steps of action, perform the steps and evaluate the action
- to identify the tools required for occupational tasks
- to identify the interpersonal relationships involved in various career roles
- to perform basic entry level tasks

7. Employability Skills

Employability Skills refers to the social and communication skills appropriate to career placement. This element includes the following abilities:

- to work in independent, team and supervised situations
- to relate one's interests and aptitudes to occupations
- to communicate effectively on the job
- to acquire specific job-getting skills as job interviewing and resume writing

8. Work Attitudes

Work Attitudes refers to one's feelings in relation to work roles. This element includes the following abilities:

- to recognize one's responsibilities in accepting a job
- to understand employer attitudes and motives
- to act in accordance with personal values and ethical principles

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Chapter II

What is Career Infusion?

Career infusion is a term used to refer to any effort of a teacher, school or school system to provide specific career-related instruction as part of an existing subject curriculum.

Most commonly, a subject teacher will plan to spend a set time on a defined career topic. This topic might involve students in activities, or might be simply a presentation of information. The length of time will vary, from a few minutes to a few weeks or more. Even unplanned, incidental references to a career topic might be considered infusion, especially if the teacher repeats these references after as part of an overall teaching objective. Here are some examples:

- an incidental comment or question, such as "Who can name some jobs where people might use the second degree equations we have been studying?"

- a discussion of a few minutes duration on a topic of interest: for example, "How do you know when someone enjoys his or her work?"

- a one-period activity in a high school French class in which students research the career opportunities in foreign languages

- a two-week unit in ecology in which students design, conduct and analyze the data from a survey about the loss of jobs which may or may not result from the passage of a bottle bill

- a six-week mini-course on the literature of work

- a semester-long career English course in which students learn job hunting skills and explore their own career development

Career infusion sometimes results in a clearly identifiable, highly visible addition to the instructional program of a school. For example, Belchertown High School offered an elective in career education several years ago, and the course was quite popular among juniors and seniors. The school committee, hearing of the success of the program, decided to make the course a requirement for graduation. High school staff and students tended to associate career education with the career education course, and the teacher of that course.

In other settings, career infusion is far less visible but perhaps even more influential in its impact on students and teachers. The educational collaborative in Natick has worked with teachers from a number of school systems west of Boston to develop materials and teaching techniques, by grade level and subject, for helping students relate school to career. Teachers have attended workshops, written curriculums, tried new approaches in class and evaluated the results. The process led to subtle changes in both subject matter and teaching methods, but few signs of these changes are evident in course titles or required readings.

Career infusion, in this sense, implies the use of career materials and concepts within the existing subject matter framework of schooling, organized around the traditional disciplines: English, mathematics, science, social studies, and so forth. It is a process which may not gain recognition and praise from the school committee or in the local press, but may well improve the quality of instruction for students. For in order to deal with career concerns, teachers must develop an individualized, personalized approach to their disciplines and answer the question, "Why is this subject relevant?" And that question is one of the most pressing for the schools today.

Planning a K – 12 Program

For many people teaching about jobs and careers seems most appropriate at the secondary school level, where students are thinking about plans beyond high school: work, further education, military enlistment, marriage and so forth. For students facing these choices, it makes sense that schools should provide whatever assistance they can in the way of guidance, information about options and instruction in specific skills judged important for young people leaving school. Career education at the high school level is easily justified, and it only remains to decide who will have the responsibility for developing and implementing the program.

The importance of career education in high schools is often so dear and the need so pressing that students in their earlier years are forgotten. Yet it is in these years that students form their attitudes toward work and develop their expectations of their own work roles. It is as early as kindergarten and before that sex role stereotypes are reinforced or contradicted, that career aspirations are first explored in fantasy play, that adult role models are identified and their behavior copied. It is in these early years of schooling that we have our first chance, through career infusion to expand career options and encourage thoughtful career decision making. In short, career education is at least as important in the primary and intermediate grades as it is at the secondary level.

Of course, the process of career development varies according to age, so the method of instruction will vary according to grade level. The following outline will suggest the processes and methods career educators encounter at three levels of schooling.

Primary Grades: Career Awareness

Primary grade students in kindergarten and even earlier are widely exposed to the work they see adults do in everyday life. The range of careers and career-type activities they encounter is quite large. In the home these include mother and dad cooking, cleaning, repairing, painting, sewing, gardening. In the neighborhood, kids may see garbage collection, police officers, road crews, telephone installers. In town, they see shop clerks, receptionists, tellers, cab drivers. The list is endless (on vacation, ...; at school, ...; at the doctor's office, ...).

What is missing, in all of this exposure, is a reasoned and structured approach to reflecting on all these views of adults working. Children are fascinated with work they see going on around them and curious to know more about it. But they rarely have a chance to interact with the adults doing the work, or even ask questions about the work. In the busy adult world, there is no time for idle talk with children.

In school, however, teachers can set aside the time to talk with their students about the world of work. They can answer questions and ask some of their own. They can clarify values, pose problems, highlight issues related to work. They can provide additional information and relate curiosity about careers to interest in school subjects. By showing, for example, how a clerk uses math or how a do-it-yourself dad has to read directions, teachers can demonstrate that school subjects are indeed useful. At the primary level, career infusion has many possibilities, all grounded in the daily experiences of children and all relating to the theme of career awareness.

The idea of career awareness is that people need to develop a sense of which careers exist before they can make choices about which careers to pursue. While career awareness begins early in life and is a life-long process, it is the most appropriate as a theme of instruction at the elementary level of schooling. The instruction will be directly related to student interests and student experiences, rather than related to subject disciplines. It will either expand the scope of exposure to new careers, or intensify students' experiences with particular careers. Most important, it will provide a framework for development to the next stage: career exploration.

Intermediate Grades: Career Exploration

As young people reach early adolescence, a general awareness of careers gives way to an intense curiosity about the work adults do, the places where they work, the products they make. Early adolescents are ready to explore, in an increasingly active way, those careers to which they were earlier exposed at a distance. They may get involved helping on the farm or with household chores, or working on a paper route. Or they may develop active hobbies or interests: fishing, sports, cooking, sewing. These interests form a base for formal career exploration in school, and should be used as an indication of interest in specific careers to be focused on by teachers planning school career activities.

Career exploration is a stage of trying out and reflecting on a number of possible occupational futures. For most students, the intermediate grades are a time of early identity formation. In the context of school, this means that students are evaluating subjects and teachers and identifying their favorites; they are also, with their parents, making course choices which will determine their options in high school and beyond. Career exploration is in this way a part of the early career decision making process and can be used to encourage rational choices. For the first time, career counseling can become an integral part of career infusion.

For intermediate grade students, one of the best ways of understanding the world is through hands-on physical experience, or at least first-hand observation. Career infusion at this grade level must take into account the need of students for concrete, structured experiences designed to enhance understanding of the world of work. Experiences such as shop classes, science labs, and home economics courses are ideal. In other career clusters, a field trip or an on-the-job shadowing experience may provide the necessary real world contact. Since intermediate school teaching is generally divided according to subject discipline, career infusion activities will now be similarly divided. The career exploration theme can thus enrich every school subject. Whatever the method, young people should be encouraged to explore all subjects as they relate to the work process, in as physical a way as possible.

By grade eight, most students should have had enough exploratory experience, career instructional units and career counseling to make some tentative commitments. The choice of vocational vs. academic high

school is made at this level, as is the choice of ninth grade courses. While the choices are not final, they do set a direction for the last four years of schooling and should be based as nearly as possible on the interests and abilities of individual students. Career infusion, at the exploratory stage, can be a valuable reality check for both students and school staff.

Secondary Grades: Career Preparation

By the time students reach high school, most of them have begun to think seriously about employment. As they go through the secondary grades, they are trying out future careers in a number of ways: school work, part-time paid work, summer jobs, hobbies. By the time they leave high school, more than 50 per cent of adolescents have worked for pay. Yet the experiences are generally random; their potential as educational experiences is unrealized.

The pressing need, along with all of these trial-and-error career experiences, is threefold. First, all students need some thorough skills training in an occupational area, whether or not they will get long-term jobs in that area.

Secondly, students need preparation for a series of career decisions they will be making during and after schooling, including choices about college, further training, geographical mobility, income aspirations, life-style expectations and other factors affecting. And third, students need personalized career guidance to provide support and assistance in the entire process.

A career infusion program designed to meet these needs will combine the resources of the guidance department and the major school subject teachers. In class, students will get career information, along with special skills appropriate to further work in careers related to particular disciplines. From guidance, students will get assistance in decision making, job hunting, selection of post-secondary education and so forth. To the degree that guidance counselors and classroom teachers can coordinate their efforts, the program will be more successful.

In the following sections of this manual, career-related activities are presented for the standard school subjects. These activities are, of course, merely suggestive of the units in a K - 12 program. But they are a starting point for teachers and other program planners.

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Chapter III

Strategies for Classroom Infusion

Almost any school subject can be related to the future careers of students. However, for the purpose of this publication, we have limited ourselves to seven subjects commonly taught at all grade levels and easily expanded to deal with one or more elements of career development.

In the following pages, we have considered these subjects one by one: English, social studies, mathematics, science, music and art, and foreign language. For each subject there is a one-page rationale followed by a series of suggested activities, organized according to the eight elements of career education. This organizational scheme, summarized on the chart on the next page, highlights certain elements which are particularly suitable to certain subjects. Self-awareness, for example, can be best enhanced in English and music/art. Economic awareness is most effectively taught in social studies or science. Several elements can be the basis for instruction in all of the subjects listed. They are the ones most commonly associated with career education.

The reader of the following pages will quickly realize that what is presented here is only a set of suggestions for classroom teachers. The activities are simply a starting point for the development of instructional units, whether for an hour or for a week of teaching time. They depend, for successful implementation, on the skills and energy of a creative teacher and the interests of a group of students. These pages are in no way intended as a curriculum in themselves. However, with time and an awareness of resources and methods, they can be developed more fully.

Figure 1

MATRIX OF SUBJECT MATTER AREAS
AND
SUGGESTED CAREER EDUCATION ELEMENT

SUBJECT MATTER AREA	CAREER EDUCATION ELEMENTS							
	1 Self-Awareness	2 Education Awareness	3 Career Awareness	4 Economic Awareness	5 Decision Making	6 Beginning Competency	7 Employability Skills	8 Attitudes & Appreciations
English	X	X	X		X	X	X	X
Social Studies		X	X	X		X		X
Mathematics		X	X			X	X	
Science		X	X	X		X		
Music/Art	X	X	X			X		
Foreign Language		X	X			X		

This chart summarizes the relationship between the eight elements of career development and six commonly taught school subjects. English, the subject with the highest number of elements checked, is the subject most commonly associated with career education. However, there are career development focal points related to all the subjects listed.

English

Of all school subjects, English is the one which offers the best opportunity for tending generalized job skills. Basic English skills, including reading, writing and speaking, are used on all jobs and at all stages of the career development process. Therefore, an English program can easily be modified to include lessons on specific job-related concerns at the high school level. These might include the following:

- how to write a resume
- how to read and respond to help wanted ads
- how to impress an interviewer
- how to fill out a job application

Career English courses at many high schools include, in addition, the task of researching and reporting on a specific career. Students might be asked to use occupational outlook and other career reference material. They might gather information through interviews with adults working at jobs in a particular career cluster; they might use employment agency information. In this way, careers becomes a research topic, a way of making an English assignment more relevant to student concerns.

And finally, there are many careers which specifically use English communications skills. As in other subjects, students can be made aware of job descriptions and job opportunities in the communications career, and those who enjoy English can be encouraged to pursue careers in this field.

At lower grade levels, the approach to career-related English activities will naturally be different. Intermediate grade students are years away from the job-hunting age, so they will not likely be interested in specific job skills or career planning. A better bet at this level is to allow for career exploration through improved contact with working adults, or perhaps hands-on experience with projects in a number of career-related areas. Dramatic productions, radio shows, video activities, photography and poetry writing are all examples of English activities related to careers in communications.

Elementary students will best be introduced to careers in English in an even more basic way. They can be made aware of the work of writers, secretaries, translators, etc. through films or stories or field trips. The principle goal at this age is to increase career awareness.

The following activities provide a range of options for teachers concerned with developing an instructional unit in career-related English. Some are specific to one grade level, but most can be

adapted to different levels. As in the case with any activities, they must be fully developed and presented in a carefully planned sequence to be effective.

Examples of Classroom Activities in Career-Oriented English

1. Self-Awareness

   Role play work situations whose students develop jobs based on their personal experience or that of their friends and families.

   Explore changing roles of men and women through search of current literature of nontraditional jobs for men, women, minorities.

   Invite some parents in for a forum with their sons/daughters on the influence of career choice on children. (Is what your parents want you to do what you want to do, etc.?)

   Have students develop a questionnaire and collect information from students on possible local leisure activities for the greater metropolitan area.

2. Educational Awareness

   Relate school work habits to English-related jobs. (How can good habits increase employability?)

   Have students choose a job and then do research on what school programs would help them. Invite a guidance counselor in to discuss their findings.

   Have students conduct follow-up survey on occupations of graduates of their school. Have them develop the survey, then summarize findings.

   Invite an alumni panel of graduates with varied interests and experiences and have students develop format for discussion.

   Invite students from a nearby college who participate in a drama group. Discuss their plans for the future with special attention to their desires to continue in drama either as a vocation or an avocation. Have students prepare intended questions together prior to the visit.

3. Career Awareness

   Have students read biographies of individuals who enjoy communications careers which are of interest to them.

   Create job situations or provide typical work experience

problems -- (example: a worker wants increase in pay). Request volunteers to role play them and discuss with class.

Have students write for free career information, each student in own area of interest, from various sources.

Have students identify those occupations which require high degree of proficiency in communication skills at beginning of course. Repeat exercise at end of career-oriented learning experiences - (as pre-test, post-test exercise), to compare their levels of career awareness.

Have students compare and contrast two occupations from the same cluster. They should include differences in pay, working conditions, educational levels, special talents, advantages and disadvantages.

4. Economic Awareness

Examine media and communications through advertisements, emphasizing the effects, both positive and negative, on the American lifestyle.

Have students imagine a job of the future and describe it. Qualifications, goals, nature of environment, etc.

In literature study, have students prepare a list of human needs and a list of luxuries. Compare and contrast -- what are the implications?

5. Decision Making

Have students identify want ads which are of interest to them and write a short essay explaining why this job would use their skills or abilities.

Have students go through the Yellow Pages and write a letter requesting job information from a particular company that interests them.

Have students read a short story or an act from a play and have them critique the selection emphasizing the appearance of a problem and problem-solving techniques. Have students break up into small groups and discuss their own problem-solving techniques.

6. Beginning Competency

Invite speakers who use communication skills in their jobs to address the class on the importance of English.

Have students write a public relations article or release on a career or institution of interest. Follow up by a visit

from a public relations expert who demonstrates the production of such an article and illustrates with samples and materials he or she has produced.

Have students write a piece for an industrial document, a government document, a want ad, a commercial advertisement, a women's magazine, etc. Compare the results with professional pieces and compare and contrast them as a group exercise.

Have students select an historical site and prepare an advertising brochure.

7. Employability Skills

Invite a speaker from an employment service to discuss points of successful interviewing, and follow up the role playing of job interviewing.

Have students study and complete applications.

Have students develop a checklist of preparations to be made before attending a job interview. Discuss the importance of planning.

8. Attitudes and Appreciations

Ask students to interview a communications worker on the job. Develop structured interview for this purpose. Tape the results and play for class discussion. Make an analysis of worker attitudes and apparent work values.

Have students discuss the relationship between work and life-style -- job satisfaction, personal satisfaction, professional satisfaction and financial benefits.

Implement a discussion on personal values as they relate to choosing a career.

Have students write a description of their own attitudes with regard to money. After several minutes, they will come together in small groups and discuss their attitudes by comparing and contrasting them.

A Knowledge of and Ability in English May Lead to the Following Occupations:

English, Oral:

Administrator:	Person in charge of overseeing the management of a business or professional operation.

Actor/Actress:	Plays an assigned part or role in a theatrical production and may sing or perform dancing routines. Much verbal expression needed.
Auctioneer:	Promotes and sells articles to highest bidder at public auction.
Clergy:	Prepares and delivers sermons and performs the ordinances of the church.
Demonstrator:	Explains and shows how merchandise works, usually by means of sales talk and demonstration procedures; also sells.
Dramatic Coach:	Coaches actors and actresses in dramatic productions and usually arranges all technical and mechanical stage settings.
Elocutionist:	Reads dramatic selections to audiences, usually interpreting various parts.
Floorwalker:	Supervises employees in a designated section of the selling floor. Answers inquiries of customers.
Hostess:	Supervises social activities of a hotel or seats customers in a restaurant; attends to wishes of airplane, train or steamship passengers.
Lawyer:	Represents clients in court and assists in all matters requiring legal advice; a legal representative.
Lecturer:	Prepares and delivers discourses on subjects about which person has specialized knowledge.
Politician:	Works and speaks in the interest of a specific political party. Must be able to speak well in public.
Radio Announcer:	Introduces participants of radio programs to the radio audience, identifies the station, makes advertising announcements.

Receptionist:	Receives clients or customers coming into an establishment.
Sales Clerk:	Sells a variety of merchandise, completing each sale quickly, and receiving cash payment for articles selected by customers.
Sales Engineer:	Sells mechanical, chemical and electrical equipment and supplies, and other products that require a technical knowledge of the seller.
Salesperson: (door to door)	Sells specialized product or service -- must be convincing in sales talk.
Telephone Operator:	Operates a telephone switchboard, must be able to speak clearly.

English, Written:

Author:	Writes articles, books, plays or poems with sufficient skill to have them published.
Continuity Writer:	Writes the sequences of scenes in a motion picture or drama or the material used on a radio program.
Copy Writer:	Writes original, descriptive copy to be used in an advertisement.
Critic:	Reviews books, arts and drama to be published in magazines, newspapers or books.
Editor:	Is responsible for editing a department of a publication or for the entire publication.
Editorial Worker:	Works in the writing department of a publication.
Journalist:	Assigments in writing for a newspaper or other periodical.
Librarian:	Supervises the classification, cataloging, shelving, and circulation of books and periodicals; also furnishes information.

Printer:	Performs any and all duties concerned with the hand and machine setting of type, the assembling of types and cuts, and related duties connected with printing operations.
Proofreader:	Reads proof of type to detect and mark for correction any grammatical, typographical or compositional errors, checking proof against original copy.
Public Relations Counsel:	Selects and assembles favorable publicity material for groups or organizations, releasing it through various media.
Publisher:	Publishes printed material and directs the marketing of the product published.
Reporter:	Collects news for publication in newspapers and writes news articles.
Script Writer:	Originates theme and dialogue for sketches, plays, and similar types of radio programs.
Secretary:	Performs general office work such as typing, filing, bookkeeping. Must know how to deal with many types of people.
Stenographer:	Takes dictation in shorthand and transcribes dictated material on a typewriter.
Typist:	Typewrites letters, addresses envelopes and does typing in an office. Must be familiar with proper grammar usage.

Social Studies

From the very first years of school, young people learn about the world of work as part of instructional units in social studies. It is in this subject area that teachers can feel most comfortable in presenting basic occupational information and answering simple questions of economics: What kinds of work do people do when they grow up? Why do our parents work? What will we be when we grow up? What is money for?

These and other questions can be dealt with in a variety of imaginative ways in the primary classroom. Parental visits, field trips, audio-visual aids, role-playing and reading all provide new information and make possible an improved understanding of the world of work. Self-awareness, career and economic awareness are all strengthened in social studies activities of this type, and a sound base is built for students to perceive and take advantage of career opportunities in later years.

The infusion of career material into the secondary school social studies courses is more of a challenge to the teacher, but the results of successful infusion are more gratifying. One approach is to relate career concerns to the specific subject matter of the course: U. S. history, world history, business economics, ethnics studies, urban studies, etc. The effort is often to make an abstract subject seem more relevant to the immediate concerns of teenagers. Another approach is to offer a separate course or mini-course on careers. Either way, a skillful teacher can provide for young people an understanding of the social and economic framework within which they are making important career decisions. The better a person's understanding of his or her social setting, the more likely that an informal career choice will be made.

Examples of Classroom Activities in Career-Oriented Social Studies

1. Self-Awareness

   Discuss the economics of daily life and its effect on family and community.

   Have students list some of the characteristics they feel are primarily "masculine" or "feminine." Invite a male and female psychiatrist in to discuss recent developments concerning sex differences involving personality traits and values.

   Invite a family counselor in to discuss the family of today and the relationship among class, status and family life.

   List and classify jobs in relation to mental and physical stress. Role play these mentally and physically demanding jobs.

Have group discussion on job clusters. Have students identify three which appeal to them. (To be considered: Are the three related? How? What does that show about you, your values and characteristics?)

2. Educational Awareness

Invite a representative of the local Chamber of Commerce to the school to explain what resources are available in the community to aid career planning.

Discuss G. I. Bill for education and other government subsidies for schooling.

Have students discuss the following: Do you think the school has the responsibility to prepare young people for work? Leisure?

3. Career Awareness

Have students research occupations utilizing social studies such as law enforcement careers relative to fringe benefits, travel and educational and retirement opportunities.

Have students make a list of characteristics that leaders in public office need to effectively serve the public. Compare those of student leaders at the school.

Have students visit a nursing home, retirement center, senior citizen's home, etc., to gain insight into the problems of aging, as well as identifying career and occupational possibilities in care and recreation of the aged.

Have students research juvenile crime and violence. Invite a juvenile officer to discuss the problems of, as well as qualifications, training and job description for, his or her job.

4. Economic Awareness

Have students select an occupation that they would not consider interesting. Have them analyze it with respect to its possible interest for those who choose it, and its value to society, in general.

Have students do a community job assessment: What businesses and industries are here? What products are produced? What manpower needs are projected for the future?

Discuss the business cycle, and its effects on the labor market.

Have students discuss and identify those factors which

stimulate or retard job opportunities. (Government spending, seasonal work, changing sex roles, etc.).

Have students investigate the influence exerted upon the nature and structure of work by (1) laws, (2) management, (3) unions and professional associations, and (4) licensing.

Have students research and make some general deductions as to the origins and basis of the American work ethic.

Have students predict the labor market needs when they will be fifty; gather data to support conflicting predictions.

Have students compare the working and living conditions of a carpenter's apprentice of colonial times with a carpenter's apprentice of today.

5. Decision Making

Have students examine national trends in employment and compare them to the local outlook for employment. Discuss the decision of staying vs. leaving, after high school.

Have students develop a survey on working women. Identify a community sample and gather data on the decisions women make when entering and leaving the world of work.

6. Beginning Competency

Have students visit businesses to determine the level of work entry skills required in a variety of jobs.

Working in small groups, provide instruction in the following helping professions skills: active listening, emphathetic responding, accurate paraphrasing, open-ended questioning.

Arrange for student volunteer experiences at a local hospital, nursing home, nursery school or other social service agency.

7. Employability Skills

Have students develop a resource file of local agencies which aid and assist local citizens in the pursuit of job information, health care, welfare, unemployment, etc.

Demonstrate and have students practice using the following saleable social science skills: stating a hypothesis, designing a survey, gathering data, compiling data, confirming or disproving the hypothesis.

8. Attitudes and Appreciations

Examine psychological factors which contribute to work stress.

Have students make a list of settings in which people work and discuss how the environment affects workers.

Have students draw from their own experience to determine how jobs of family members affect social life and lifestyle. Compare with other class members.

Have a social worker discuss not working, its effect on the individual and those around him or her.

Have students research the attempts currently underway to eliminate racial discrimination in the world of work, including "equal opportunity" and "affirmative action" legislation, and their effect on local employers.

Examine leisure time activities created through technological developments and have students debate advantages and disadvantages of technological development.

Have students debate the question, "Do People Really Have A Need to Work?"

A Knowledge of and Ability in Social Studies May Lead to the Following Occupations:

Administrator:	Administrates or supervises a department of a business firm, organization or governmental agency.
Anthropologist:	Studies the origin and physical character of ancient humans; culture, environment and social relations.
Arbitrator:	Helps settle disputes between business firms or between labor and management.
Archaeologist:	Makes studies of ancient civilizations through art, relics, and ruins found in excavations.
Bank Cashier:	Acts as an executive of a bank, administering policies formulated by the board of directors, and personally representing them in transactions in the banking business.
Case Worker:	Investigates the physical and social environment of a family, person or persons in order to devise and execute practical plans for alleviating existing conditions; a social

worker.

Claim Adjuster:	Investigates claims for damages, estimates amount of damages, and tries to effect settlement out of court.
Clergyman:	Prepares and delivers sermons and performs the ordinances of the church.
Counselor:	Works in social service organization to help people deal with their concerns. Must have knowledge of theories of counseling and a good understanding of people.
Court Reporter:	Records by shorthand or stenotype the testimony, judicial opinions, decisions and other proceedings in a court of law.
Curator:	Has charge of a museum or museum department, arranges exhibits, and conducts research for new exhibits.
Economist:	Performs technical and scientific work in the field of economics, planning, organizing, conducting and reporting upon economic research.
Employment Interviewer:	Interviews job applicants to ascertain what work is best suited to their particular abilities.
Etymologist:	Specializes in the study of the origin, history and development of words.
Genealogist:	Studies and traces family lineage or the history of an individual from their ancestors.
Historian:	Conducts an intensive research into a particular phase of history in order to record and explain past facts and events.
Insurance Agent:	Sells various types of insurance to clients.
Judge:	Presides as an arbitrator, adviser and administrator of justice in a

	court of law.
Lawyer:	Represents clients in court and assists in all matters requiring legal advice; a legal representative.
Personnel Clerk:	Keeps employment records of company personnel.
Politician:	Works for the interests of a political party.
Political Scientist:	Performs technical and scientific work in the field of political science, planning, organizing, conducting and reporting upon political science research.
Psychologist:	Studies the science of the human mind, its activities, capacities and functions, as well as counsels clients.
Psychiatrist:	Studies and analyzes the human mind in order to deal with mental disorders; is a physician.
Public Service Worker:	Is employed by the government to give protection, maintain public works, handle certain types of social welfare work.
Social Worker:	Is engaged in one of the various phases of social work. Deals with families, as well as individual clients.
Sociologist:	Formulates, conducts and directs research in sociological fields, studying human nature and patterns of people in societies.
Statistician:	Plans procedures and techniques for solving statistical problems, interprets and presents findings.
Teacher:	Instructs students in an educational institution in history courses.
Teller:	Receives deposits, pays out money and keeps accurate records of money involved in banking transactions.

Mathematics

Arithmetical and numerical skills, as taught in the primary grades, are essential to virtually any occupation and at every job level. As the world of work becomes more mechanized and automated equipment is used more widely, the reliance of workers on simple mathematics will increase. In service jobs, too, number manipulation is a necessary part of the work.

Every career mathematics unit can relate common themes of number use in everyday life to the learning of basic skills and concepts. Examples include money transactions, such as making change and comparative pricing, as well as physical measurement: size, weight, volume, temperature, speed, thickness, time and so on.

What is difficult, in teaching math, is to relate more advanced math concepts to career or consumer applications. The fact is that relatively few workers at any level use algebra, geometry, trigonometry or calculus skills, yet schools and colleges require large numbers of students to study these subjects. While career applications can, of course, be demonstrated (in science, engineering, data processing, social science, etc.), most students are perceptive enough to realize that these occupations make up only a small part of the total labor market.

One solution, in planning a career infusion unit, is to combine an emphasis on practical applications of basic math skills with an exposure to information about a few math-intensive careers.

The following activities provide a range of options for teachers concerned with developing an instructional unit in career-related mathematics. Some are specific to one grade level, but most can be adapted to different levels. As in the case with any activities, they must be fully developed and presented in a carefully planned sequence to be effective.

Examples of Classroom Activities in Career-Oriented Mathematics

1. Self-Awareness

   Have students compile a document of avocational interests which make use of math skills.

   Have students bring in labels from cans, newspaper articles, library books, etc., to use in a discussion of math in everyday life.

   Visit a local factory and have students interview workers regarding their use of math. Students should collectively construct an employee questionnaire before making the visit and should bring their results back into class after the visit for a discussion. This discussion should include student developed suggestions of what they would like to learn in math classes which will be useful throughout their

lives.

Have students make a list of personal characteristics they consider to be related to math.

Based on interviews with insurance adjusters, underwriters, etc., have students prepare some life expectancy tables.

Have students research the relationship between math and music. Invite a music teacher in to discuss this topic.

2. Educational Awareness

Have students research college catalogues and technical school bulletins and identify higher level math requirements as based on the prerequisite of Algebra I. Follow up with a visit by a Guidance Counselor who discusses the importance of math skills to career planning.

Have students research the occupations of pharmacist and chemist to determine the necessary Algebra II skills needed to pursue these occupations.

Based on their explorations of math-related careers, have students identify those areas in math which they expect will be useful to them in their tentative career choices.

Have students develop a list of occupations in which geometry is used.

3. Career Awareness

Have students compile a "job bank file" containing jobs which require math skills indicating the degree of facility required in each.

Have students figure acreage on an irregularly-shaped lot and list occupations which might require this skill.

Have students figure the amount of interest paid on a loan for a given number of years, and research occupations that might require this skill.

Have students relate the occupations of machinist, architect, landscape designer, civil engineer and brick layer to geometry.

Have students show how geometry is relevant to the occupations of carpentry and plumbing.

Have students examine the 15 Occupational Clusters used by the U. S. Office of Education and choose one occupation in each cluster that requires use of math. Compile a list of all of these occupations, by cluster, and brainstorm

additional math-oriented occupations.

Using the above list, have groups of three students pick one cluster each and role play a situation in which mathematics is used.

Invite local representatives from the state employment service to address the class on math in emerging occupations.

Invite a landscape architect in to geometry class to discuss the use of computations, scale drawings, geometric shapes, at work.

Have a travel agent address the class on computations of package deals; overhead costs and profits.

4. Economic Awareness

Computer technology - Discuss the future of math in the wake of the computer age.

Provide students with a family budget and have them calculate payments, interest on loans, carrying charges, medical bills, credit cards, rent and savings. Discuss interest rates and how they affect our lives.

Have students examine newspapers and periodicals to collect examples of math in advertising. Bring in findings and discuss them in class.

Every week, highlight one aspect of consumerism which relates directly to math skills. Have students propose areas that interest them and ask them to prepare some consumer presentations.

5. Decision Making

Have student state the hypothesis and conclusion of a theorem and relate it to occupational decision making. (Identify problem, collect data, test data and draw conclusions relating to occupational interests.)

Have students work in groups to develop a "math in your career" series to be used with elementary students in a local elementary school. (If possible, have students present programs related to the use of math in these classes.)

Arrange with a local TV or radio station to expose students to careers from the following areas: research, sales, business administration, arts and design. Ask representatives to discuss the importance of mathematics and the specific skills needed in their respective positions.

Have students read and graph want ads to find requirements

for jobs in relationship to salaries. Also, graph the relationship of fringe benefits.

6. Beginning Competency

Using basic math skills relative to scale drawings, students will explore the occupations of drafting, interior design, architecture and pattern making. Students will make a scale visual.

Have students interview workers who use math in their jobs.

Have students study the averages of football, basketball and baseball professionals.

Have students compute several bank statements and practice some bank procedures.

Arrange a school-based panel including an industrial arts teacher, maintenance people, a nurse, an administrator, a guidance counselor, a business teacher to discuss their use of mathematics in their jobs.

Invite a coach in to demonstrate score-keeping and athletic records using math skills.

Have a lawyer and/or a legal secretary speak to the class about mathematical sentences, reading and understanding contracts, legal terming, and the importance of accurate figures on legal documents, etc.

Have students visit local retail stores and interview managers with regard to the importance of math, its daily use, and accuracy training.

Discuss careers that use the metric system. Invite a representative from one of these careers to address the class.

Have students conduct a survey in the high school of the most popular rock musicians. Have them compute and publish the results. Invite a statistician in to discuss the use of surveys in his/her work.

Have students identify at least five careers in politics and interview practitioners with regard to campaign funding, voter statistics, math in the electoral process, public opinion polls, rating scales, advertising and the media. Students might also take a presidential poll of their school and publish the results.

Have students research those careers using measurement and layout skills.

Teach the students the principles of basketball scoring with

the aid of a basketball coach, then have them attend a game and keep game statistics.

7. Employability Skills

Have students interview community employers by conducting a survey on the math skills required in jobs at their sites.

Have students use a small group approach to solve difficult math problems. Afterwards, discuss the roles of each group member as it relates to the tasks and processes of the group, the task of getting the job done, and the processes of communication among group members.

8. Attitudes and Appreciations

Have each cluster group identify and invite in a person from the community within its designated cluster to talk about or demonstrate math as it affects his/her occupations.

Offer an introduction to income taxes, sales tax, social security problems, and other math needs by adult workers.

Assuming a given rent as a maximum, have students compute the cost at which low cost public housing will have to be built in order to break even within a period of 20 years. Discuss all the careers related to housing and their use of math skills. What are the implications for the consumer?

Have students make a list over one week's time of places, people and actions in which math is used in daily life.

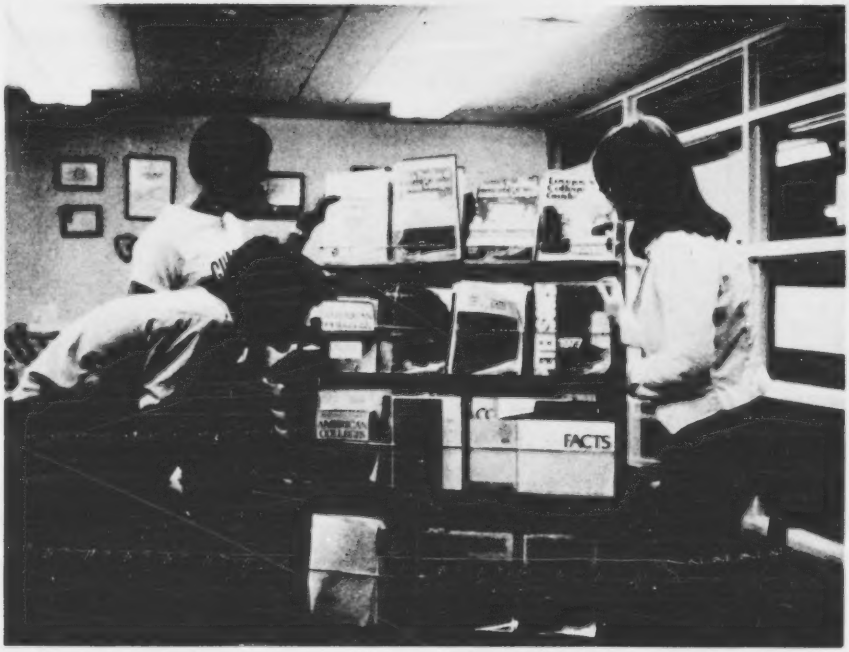
A Knowledge of and Ability in Mathematics May Lead to the Following Occupations:

Accountant:	Devises accounting systems, prepares financial statements, audits books, and does other accounting work.
Actuary:	Calculates the rates to be charged for different kinds of insurance; is a specialized statistician.
Aeronautical Engineer:	Designs, tests and supervises the construction of aircraft.
Airplane Inspector:	Inspects aircraft fittings and assemblies for conformation with specifications.
Architect:	Plans and oversees the construction of buildings and other objects.

Astronomer:	Studies and deals with the science which treats of heavenly bodies, such as stars, planets, etc.
Auditor:	Examines the accounts and books of business establishments and prepares financial reports.
Bookkeeper:	Keeps records of all business transactions of a firm, handles payrolls, prepares monthly statements and makes bank deposits.
Bursar:	Receives and accounts for tuition fees and other receipts of a school.
Cashier:	Takes and pays out money, keeps records and prepares money for bank deposit.
Ceramic Engineer:	Conducts research and directs the technical work in the manufacture of ceramic products.
Chemical Engineer:	Designs chemical equipment and supervises industrial chemical processes and research.
Civil Engineer:	Specializes in the construction of bridges, waterworks, dams, highways, buildings and municipal sanitary systems.
Controller:	Supervises the financial affairs of a business concern or organization.
Draftsperson:	Prepares detailed working plans and drawings for engineering and manufacturing purposes, according to specified dimensions.
Electrical Engineer:	Designs electrical equipment, plans electrical systems and supervises the erection and operation of the equipment.
General Office Clerk:	Performs extended clerical duties.
Industrial Engineer:	Conducts time and production studies, plans plant facilities, sets up wage scales and organizes safety campaigns.

Inventor:	Originates a new mechanical improvement, device or machine.
Laboratory Assistant:	Prepares scientific equipment and helps conduct experiments.
Marine Engineer:	Supervises the construction and installation of mechanical equipment for ships; is a mechanical engineer.
Master:	Has complete charge of and responsibility for any vessel or watercraft requiring licensed officers.
Mathematician:	Attains eminence in some field of mathematics and is a recognized authority in that field.
Mechanical Engineer:	Designs industrial tools and machinery, supervises their operation and conducts research.
Office Machine Operator:	Operates any office machine.
Optician:	Makes optical goods and supplies, grinding, polishing, curring, edging and mounting glasses to specifications.
Optometrist:	Examines the eyes for defects that can be corrected by glasses or exercises.
Physicist:	Conducts research into phases of physics, performs experiments, and may teach.
Radio Engineer:	Designs and constructs radio equipment and does research; may handle the operation of a radio broadcasting station.
Research Worker:	Conducts research in business, economic, social and education fields, using statistics.
Statistical Clerk:	Compiles regular and special reports for the use of the management and as a basis for statistical study.
Statistician:	Plans procedures and techniques for solving statistical problems, interprets and presents findings.

Surveyor:	Supervises and directs engineering surveys and compiles necessary data.
Teacher:	Instructs students in an educational institution in mathematical courses.
Ticket Agent:	Sells tickets for transportation agencies.



Science

In a society which relies increasingly on scientific and technological development, there is no question about the importance of science for future workers and consumers. This is not to argue that large numbers of young people will grow up to be scientists. On the contrary, as science becomes a more specialized occupation, the outlook for professionals in the field is not nearly as good as the opportunity at lower levels: technicians, aide, assistant and so forth. However, for workers at these levels, science knowledge and concepts, and familiarity with scientific procedures, is essential to job success.

Science has of course had an impact on the work process far beyond the strictly science-related career clusters. In manufacturing, in commerce, in transportation, in the service occupations, science is the source of new jobs, new products, new production techniques. An understanding of science, at least at the intermediate school level and perhaps beyond, is essential to those who will be struggling to understand their changing world ten, twenty or thirty years from now. While science skills will be saleable only in regard to a few jobs, they will be personably valuable in any job, to any worker who maintains a sense of involvement in the work process.

Science instruction in the schools provides a great opportunity for career infusion, because it is so suitable to hands-on projects. Of the academic subjects, only science has traditionally been taught, at least in part, in a lab format. Only in science can students become physically involved in the career-related projects they undertake and still be working within the guidelines of the standard curriculum.

Unfortunately, science has for years been taught as a factual body of knowledge with names, formulas and information to be memorized in large quantities and with little experiential base. With career infusion, the opportunity has arisen to expose students once again to the excitement of the scientific process, the experimental method. The most powerful form of career education, in science, is to have students do in the lab what adults are doing in the science-cluster occupations: invent, test, measure, compare, mix, grow, watch and so on.

The following activities provide a range of options for teachers concerned with developing an instructional unit in career-related science. Some are specific to one grade level, but most can be adapted to different levels. As in the case with any activities, they must be fully developed and presented in a carefully planned sequence to be effective.

Examples of Classroom Activities in Career-Oriented Science

1. Self-Awareness

Discuss students' attitudes toward scientific study -- new

and future concepts. What is the role of the scientist in society? -- How is he/she received by society?

Explore vocational interests which utilize scientific principles.

Have each student devise one method to reclaim one reusable item from garbage.

Have students keep a log in which they record the influences and effects of science and scientific principles in their everyday life.

2. Educational Awareness

Have students research opportunities for employment in the field of medicine which do not require a college education.

Have students select a variety of careers for which physics is a prerequisite and educational requirements fall into the following categories -- vocational/technical, two-year college, four-year degree.

Have students identify those careers which currently use the metric system.

3. Career Awareness

Have students talk to people involved in ecology in Massachusetts, conditions of our weather, water, land and air.

Have students research the following careers related to science, and be prepared to demonstrate scientific principles utilized in each: mechanical engineer, astronaut, optician, air conditioning and heating technician, construction worker, electrician, radio broadcaster and photographer.

Have students photograph and interview workers in five occupations related directly or indirectly to the study of human physiology.

Visit a state or national forest as a group and develop a collection of careers related to this site.

In introducing the microscope, have students center their discussion around research of occupations in which the microscope is used.

In earth science, have students investigate the work that people do in studying the earth, its formation, maintenance and future uses.

Provide students with an overview in the area of water and waste water technology, including an introduction to basic

hydrology, microbiology, sanitary chemistry, water supply and control, purification, wastewater treatment.

Provide students with an overview of plant production, including an introduction to disease control, soil and water conservation, propagation, fertilization, classification and identification of plants, harvesting and storage, marketing, cultivation, machinery and equipment.

Provide students with an overview of careers in forestry conservation and recreation. They will explore areas such as tree planting, identification, land mapping and measurements, harvesting operation, diseases and inspects, fire control, landscaping, fisheries management, soil and water management land use, and wildlife management.

Provide students with the opportunity to research one of the following areas of agriculture business and report back to the class with pertinent information on the field: turf management, floraculture, landscape-nursery, resource conservation management, marine resources, outdoor recreation, food products, small animal technology.

Have chemistry students identify careers in the occupational classifications of biochemistry and astrochemistry.

4. Economic Awareness

Have students research the role of science in planning for the year 2000.

Have students research those careers related to bodies of water.

Have students list and describe some ecological activities.

Explore scientific change which may affect employment opportunities in the near future. (i.e., specialization resulting from advanced technology).

Research jobs which have been modified, eliminated or greatly changed through scientific discoveries.

Have students investigate the space industries to discover how advancement in science has created a wide variety of new jobs and how these jobs are changing.

Have students construct a windmill as a source of power.

5. Decision Making

Have students research specific scientific industries and report back to the class on careers in these industries which relate to their interests.

Debate on the advantages and disadvantages of technological development.

Have students explore job opportunities as paraprofessionals in science and why they are necessary.

Have students develop an occupational file of scientific careers to be used by their science class.

Have students compare science-related occupations on a number of variables such as level of education, income, travel, work environment, etc. Have them choose which job they would like.

6. Beginning Competency

Have students use photographic equipment to study the growth of plants. Discuss the value and use of photography, and the increase of its application in scientific research.

Have students study and experiment in water testing. They will research those occupations in which skills will be useful, including work in the environment, sewerage treatment plants, industrial waste elimination.

Have students research the chemistry of the ocean. They will identify occupations growing out of renewed interest in the ocean. They will invite speakers from the aquarium and from Woods Hole Institute to address the class on occupations of the present and the future in marine science.

7. Employability Skills

Have students plan, plant and care for a vegetable garden. They may market their produce, with the help of a community member in the produce field.

Have students demonstrate use of scientific problem solving techniques in everyday problem solving.

Have students develop a resume which highlights their educational strengths in science and practical experience in the field.

Explore with students part-time and summer employment opportunities which are related to the field of science.

Invite the personnel director from a local hospital to speak to the class on job opportunities and requirements in various fields.

8. Attitudes and Appreciations

Have a speaker from social work or medicine discuss how jobs

affect mental or physical health and how they are interrelated.

When dealing with heat and fuels, have students calculate the BTU ratings needed to air condition or heat their own homes; brainstorm to identify a number of occupations related to these scientific concepts.

Have a speaker from a local community health program to address the class on the importance of science in his/her occupation.

Have a music teacher address the class on the subject of the scientific principles which explain musical tone discrimination.

Have students explore the problems that our advanced medical technology has created with regard to society's concept of morality.

A Knowledge of and Ability in Science May Lead to the Following Occupations:

Biological Sciences:

Anesthetist:	Administers anesthetics in order to render a patient insensible or immune to pain during an operation; is a doctor or a nurse.
Anthropologist:	Studies the origin and physical character of ancient humans, culture, environment and social relations.
Bacteriologist:	Examines bacteria under a microscope and studies their morphology, physiology and reactions.
Biochemist:	Specializes in experimental research and in the applied science of the chemistry of living organisms.
Biological Aide:	Assists professional research workers in carrying out biological experiments.
Biologist:	Studies the origin, development, anatomy, functions, distribution and other basic principles of plants and animals.
Botanist:	Studies and identifies the various kinds of plant life, and assembles

	data regarding their occurrence, habits of growth and economic value.
Chiropodist:	Diagnoses and treats minor ailments of the human foot.
Chiropractor:	Manipulates or adjusts the joints of the human body to relieve illness believed due to pressure on the nervous system.
Curator:	Has charge of a museum or museum department, arranges exhibits, and conducts research for new exhibits.
Dental Hygienist:	Assists dentist in removing deposits and stains from teeth and in other dental duties.
Dental Technician:	Prepares dental plates and bridgework; may also develop X-ray pictures and keep records.
Dentist:	Engages in the practice of extracting, filling, cleaning and replacing teeth, treats diseased gum tissue, and performs surgical operations on jaw and mouth when necessary.
Dietitian:	Plans daily menus and special diets containing the proper proportions of food elements for a hotel, restaurant, school, hospital, or other public institution.
Entomologist:	Studies insects and their relation to crops and people.
Farmer:	Skill and knowledge required of the growing and maintenance of crops and livestock. Must have business management skills.
Forest Guard:	Fights fires in a forest, cuts brush, registers cars, cleans the campgrounds.
Forest Ranger:	Issues grazing permits, supervises fighting of forest fires, construction of telephone lines, trails, and other improvements and generally manages a forest district.

Forester:	Performs skilled duties of a professional nature in managing and caring for forests.
Gardener:	Keeps flowers, trees and the premises about a home in a healthy and attractive condition.
Horticulturist:	Is an expert in the cultivation of gardens and orchards.
Immunologist:	Specializes in research on organisms immune to communicable diseases; is a bacteriologist.
Laboratory Technician:	Performs medical duties in a hospital or medical laboratory, such as making tests, preparing vaccines, and typing blood.
Masseur:	Massages clients to improve health.
Medical Technologist:	Works in a laboratory in hospital conducting various analysis and research on patients, i.e. blood type, infections, diseases, etc.
Nurse:	Performs various duties in caring for ill and injured persons. Must have nursing school training.
Nurseryperson:	Propagates trees, shrubs, vines or flowering plants for transplanting or sale.
Occupational Therapist:	Works with disabled patients in hospitals and institutions to help them regain their strength by various methods, such as crafts, drawing, talking, etc.
Opthamologist:	Specializes in the treatment of eye diseases; is a physician.
Optometrist:	Examines the eyes for defects that can be corrected by lenses or eye exercises and prescribes glasses whenever necessary.
Osteopath:	Heals illness by application of mechanical braces, manipulation of bones, muscles, nerves, and by use of other mechanical remedies.

Paleontologist:	Searches for fossils on field trips and studies them to determine ancient forms of life.
Pathologist:	Studies of the nature, causes, and development of various diseases, and the structural and functional changes caused by disease; is a physician.
Pharmacist:	Compounds and prepares medicines and preparations as directed by physicians' prescriptions.
Physician:	A doctor of medicine engaged in diagnosis, prescribing medicines and otherwise treating diseases and disorders of the human body.
Physical Education Teacher:	Knowledge of sports and workings of the human body and developing of muscles.
Psychiatrist:	Studies and analyzes the human mind in order to deal with mental disorders; is a physician.
Psychologist:	Studies the science of the human mind, its activities, capacities and function. Is also a therapist who does counseling.
Surgeon:	Specializes in performing operations; is a physician.
Taxidermist:	Prepares, stuffs and mounts skins of birds or animals in lifelike form.
Teacher:	Instructs students in an educational institution in science courses.
Undertaker:	Makes arrangements for and conducts funerals.
Veterinarian:	Studies and treats diseases of animals, is a doctor.
Zoologist:	Specializes in animal science, care and treatment; may mount specimens for museum exhibition and hunt new specimens.

Chemistry:

Agronomist:	Makes qualitative analyses of soil samples; is a soil chemist.
Assayer:	Analyzes ores and alloys to determine the proportion and value of the metallic contents; is an inorganic chemist.
Bacteriologist:	Examines bacteria under a microscope and studies their morphology, physiology and reactions.
Chemical Engineer:	Designs chemical equipment and supervises industrial chemical processes and research.
Chemical Secretary:	Performs general office work for chemists or chemical firms; must have some knowledge of chemical terms.
Chemist:	Performs chemical analyses and tests and often does research.
Chemurgist:	Applies chemistry to agricultural products to render them useful to industry.
Dentist:	Engages in the practice of extraction, filling, cleaning, and replacing of teeth, treats diseased gum tissue, and performs surgical operations on jaw and mouth when necessary.
Dietitian:	Plans daily menus and special diets containing the proper proportions of food elements for a hotel, restaurant, school, hospital or other public institution.
Drycleaner:	Operates a dry cleaning machine to clean garments and other articles.
Electro-chemist:	A physical chemist who specializes in the relation of electricity to chemical changes.
Firefighter:	Is a member of the fire-fighting force of a city or town.
Geologist:	Collects samples of rock and soil

	during field expeditions, studies earth's strata, and makes geological maps.
Laboratory Technician:	Performs medical duties in a hospital or medical laboratory, such as making tests, preparing vaccines, and typing blood.
Medical Secretary:	Performs general office work for doctors; must have some knowledge of medical terms.
Metallurgist:	Analyzes ores and properties of metals, performs research and directs or advises regarding industrial processing of ores and the treating and alloying of metals.
Mineralogist:	Collects, analyzes, and classifies samples of various types of minerals; is a geologist.
Mining Engineer:	Makes preliminary surveys of mineral deposits or undeveloped mines and plans their development.
Pharmacist:	Compounds and prepares medicines and preparations as directed by physicians' prescriptions.
Physician:	A doctor of medicine engaged in diagnosing, prescribing medicine and otherwise treating diseases and disorders of the human body.
Teacher:	Instructs students in an educational institution in chemistry courses.
Textile Technician:	Performs physical and chemical tests on cloth to check weight, content, fastness of dye, tensile strength and shrinkage.
Physics:	
Accoustician:	Specializes in physics, especially sound, performing various duties, such as advising designers of auditoriums on construction to insure audibility.
Astronomer:	Studies and deals with the science which treats of heavenly bodies,

	such as stars and planets.
Civil Engineer:	Specializes in the construction of bridges, waterworks, dams, highways, buildings and municipal sanitary systems.
Car Mechanic:	Knowledge and skill of engines, ability to repair and work with motors and tools. Need to know system of working parts.
Electrical Engineer:	Designs electrical equipment, plans electrical systems, and supervises the erection and operation of electrical equipment.
Electrical Repairperson:	Keeps electrical equipment in good repair and operating condition.
Electrical Tester:	Carries out prescribed tests on all types of electrical equipment.
Electrician:	Lays out, assembles, installs and tests electrical fixtures, apparatus, control equipment and wiring.
Electro-chemist:	Specializes in the relation of electricity to chemical changes; is a physical chemist.
Electroplater:	Covers metal objects electrolytically with a coat of some other metal.
Electrotherapist:	Exposes client to electric-ray lamps or electric pads or devices for therapeutic purposes as prescribed by a physician.
Geologist:	Collects samples of rock and soil during field expeditions, studies earth's strata, and makes geological maps.
Lineperson:	Erects power lines which conduct electricity from power plant to place of use.
Mechanical Engineer:	Designs industrial tools and machinery, supervises their operations, and conducts research.

Metallurgist:	Analyzes ores and properties of metal, performs research, and directs or advises regarding industrial processing of ores and the treating and alloying of metals.
Meteorologist:	Studies weather conditions and forecasts changes in the weather.
Optician:	Makes optical goods and supplies, grinding, polishing, cutting, edging and mounting glasses to specifications.
Petroleum Engineer:	Performs engineering work concerned with the discovery, drilling and production of oil.
Physicist:	Conducts research into phases of physics and performs experiments.
Radio Engineer:	Designs and constructs radio equipment; may assume charge of the technical operations of a radio station.
Radio Operator:	Controls the operation of and adjusts all the equipment associated with the transmitter of a radio station.

Music/Art

The occupational outlook is often a clue to the importance of career infusion in a particular subject. In music and art, however, this is not the case. Relatively few people are employed in careers related to these two areas, yet the possibilities for career infusion in these subjects are impressive. These subjects are important for their cultural content rather than their saleable skills alone, and they provide career education a chance to support cultural as well as economic development.

Music and art, while they remain relatively unimportant areas of employment for adults, are two of the most important areas of experience for young people in any society, and our society is no exception. Beginning early in life all of us sing, dance, and make music; we draw, paint, arrange, shape and in other ways transform our visual environment. We are active listeners and lookers, consumers of music and art at a primitive level at first and later in a more sophisticated way.

At every stage, most young people can be easily involved in instruction in these areas, especially if the teaching is related to their level of understanding of the field. Pre-school students sing nursery rhymes, and make collages; primary school students play instruments and make puppets; secondary students may become involved in more organized forms of music (band, orchestra, chorus) or art (murals, dramatic productions, art shows). Music and art, if properly taught, can be a central theme in the educational experience. More than just fun and games, these two subjects can provide a link with popular culture and with social history which few other school subjects can match.

So strong is our need for involvement with both music and art that, for most people, our interest in both continues throughout life. Few of us are professional musicians or artists. However, at church, in social settings, at work, in the shower, we continue to sing; in our homes, our yards, our offices and our public spaces we continue to design and decorate the environment.

Music and art, as school subjects, can be expanded through career infusion in a number of ways in light of this life-long pattern of involvement, no matter that the prospects for paid employment are not great.

First, musical and artistic encounters can enhance self-awareness, which is the basic developmental step toward successful career choice. Second, expanded instruction can increase educational awareness especially in orienting students toward lifelong education in amateur music and home arts and crafts. Finally, students can gain economic awareness by considering the social and economic impact of music and art.

For students preparing for paid employment in these fields (see list of occupations, below), career infusion should provide both

beginning competency and employability skills. For the majority of students, however, music and art will remain an avocation. Career infusion should be planned in light of this fact.

Examples of Classroom Activities in Career-Oriented Music

1. Self-Awareness

   Students will each choose a popular song and report on the nature of that song and how it reflects our society.

   Students will discuss the role of music in the youth culture.

   A panel will be presented to class on lifestyles through music. Panel will include a pop singer, a folk singer, a classical musician, a jazz musician, a gospel singer.

2. Educational Awareness

   Students will invite a student from a local conservatory to discuss education and training for a music career.

   Have students research the possibilities for further education in music, including music school, college, technical school, private lessons, membership in amateur or professional groups.

3. Career Awareness

   A recreational therapist will address the class on his/her job and the role of music in the therapy process.

   Students will compile a file of music-related occupations for class use.

   Students will examine "work songs" -- how they relate to working conditions and lifestyles.

4. Economic Awareness

   The Broadway musical as a business endeavor will be addressed by the teacher, including concepts such as financial backing, being on the road, openings, etc.

   An advertising representative will address "the role of music in selling through the media."

   Students will keep a week-long log on music used in advertisements, on TV and/or radio. They will make note of the purpose of music and its effectiveness as a persuader.

   A business manager will address the class on the effects of music on workers and consumers.

Students will visit a television studio to learn use of music in telecasts of various kinds.

5. Decision Making

Have students write a critique of their favorite top forty, soul, rock, country, classical or other music show or album.

Have students in small groups plan and perform a piece of instrumental or vocal music; ask each participant to keep a journal of decision making experiences in the group; discuss the tension state between individual creativity and group process in decision making.

Have students read a biographical sketch of the career decision points in the life of a famous (or favorite) musician.

6. Beginning Competency

A local disc jockey will address class on beginning competencies for his/her job, and other jobs involved in producing radio music shows.

Students will invite local musicians in to play in their school. They will be responsible for organization of the concert, public relations, ticket sales, staging and programming.

A piano tuner and/or music technician will discuss his/her occupation with regard to beginning competency.

7. Employability Skills

Have students prepare an instrumental or vocal selection for an audition; role play the audition, using a student panel as the judges.

Have students prepare a resume emphasizing musical ability and a career interest in music.

8. Attitudes and Appreciations

A member of the Boston Symphony will address the class on the work and lifestyle of a professional musician.

Using biographical information, ask students to identify the work attitudes appropriate to each of the following: rock star, rock back-up group member, sound engineer, business agent, producer.

Examples of Classroom Activities in Career-Oriented Art:

1. Self-Awareness

Students will visit four settings -- occupational, institu-

tional, environmental, and the home. These will be compared and contrasted with each other with regard to the roles of art, architecture and decoration in each.

A representative from a museum will discuss the role of the museum in society.

Free expression in art will be examined as it pertains to psychology and sociology. (A social science teacher may serve as a guest speaker to lead the discussion.)

A panel discussion will take place on the effect of art on the quality of life. The panel will include: a commercial artist, a cartoonist, an architect, a landscape designer.

A home economics teacher will be a guest speaker on home decoration as a creative art.

Students will make a list of crafts and compare and contrast each craft's contribution to aesthetics.

Students will research the art of cartooning. They will examine cartoons for visual symbolism, universals of humanity, humor reflected in lifestyle, political meaning, artistic quality. They will discuss the role of cartooning in the American way of life.

Have students draw cartoons showing their own characteristics as emphasized by different work situations.

2. Educational Awareness

Older students will spend several hours with younger students engaged in a school art project.

Students will research the possibilities for post-secondary training in commercial art and fine art, and report on their findings (include colleges, continuing education, technical schools, on-the-job training, apprenticeships).

3. Career Awareness

Students will research the role of art in one of the following: landscape, architecture, transportation, appliance design. Their reports will be discussed in class.

A recreation therapist will address the class on the role of art in mental health.

Students will discuss television as an art medium. This will be followed up by a representative from a local TV station who will discuss art as part of his/her occupation.

A landscape designer will address the class on his/her occupation.

A local florist will address the class on the art of flower arranging.

A local jeweler will address the class on his/her art.

After students research and discuss occupational choices, they can construct visual displays such as collages which reflect tentative occupational choices.

Students will select an occupation in the art field and research the basic educational elements they feel they would need to pursue a career in that area.

4. Economic Awareness

Students will discuss the need and contributions of art to the American way of life. The subject will include: historical value, aesthetics, consumerism, advertising, family living, environment, architecture.

An urban planner will address the class on the role of art in community planning.

Students will keep a log of the uses of art in advertising for a week. They will discuss their findings on the role of art in consumerism.

Each student will bring from home a package, jar, bottle, label, etc., which illustrates creative ability in art.

Have students choose a certain art product (i.e. oil paints) and trace it from production to utilization.

5. Decision Making

Students will critique each other's art projects.

Students will be assigned group projects to plan and execute. Have each student keep a log of the decision making process; end the project with a discussion of group vs. individual creativity.

Have students research occupations using artistic ability and analyze these occupations on several criteria (educational requirements, pay, work environment, upward mobility, pressure, etc.). Encourage students to make a tentative choice based on their values.

6. Beginning Competency

Students will collect several movie reviews by film critics and discuss the content as it reflects the film maker's artistic abilities.

Have students conduct a sidewalk art sale handling all details, (expense, etc.).

After a shadow experience of workers on the job, students will isolate those skills that are specifically art-related as opposed to those that are general job skills.

Have students manufacture and sell greeting cards and determine costs, labor and profit.

7. Employability Skills

Have each student assemble a portfolio of work; pair students for review of each other's work.

Ask students for one week to read and clip help-wanted ads in art-related occupations.

8. Attitudes and Appreciations

Students will make a collective list of what they consider to be the traits of people in fine arts occupations. They will compare their list with other occupations and discuss similarities and differences.

A Knowledge of and Ability in Music May Lead to the Following Occupations:

Accompanist:	Plays the accompaniment, usually on a piano, for a vocal or instrumental performance.
Arranger:	Arranges or adapts melodies to suit playing styles of various orchestras or bands and writes musical scores for programs.
Business Agent:	Arranges bookings, contracts, and financial details for musicians.
Choirmaster:	Conducts choir, selecting and arranging music.
Composer:	Conceives and writes musical compositions and translates the melody and harmony into notes.
Concert Master:	A musical director of a concert performance.
Conductor:	Directs the rehearsal and conducts the public performance of an orchestra and selects the compositions to be played.

Dancer:	Performs dances alone, with a partner or in a group.
Music Critic:	Reviews musical performances and writes comments for publication.
Music Librarian:	Files and indexes recordings, sheet music, original arrangements, and copies of the various parts for the instruments of an orchestra.
Music Publisher:	Publishes music and directs the marketing of it.
Musical Instrument Repairperson:	Repairs different kinds of musical instruments.
Musical Program Builder:	Arranges the musical program of commercial radio broadcasts.
Musician:	Is an instrumentalist, singer, writer or conductor of music.
Orchestrator:	Arranges melody for orchestral use, selecting the instruments to be employed, and writing the musical score.
Organist:	Plays an organ, possibly in church, orchestra, or solo concert.
Pianist:	Plays a piano in an orchestra, or in private performances.
Piano Tuner:	Tests and adjusts the strings in a piano so that they conform to pitch and sound harmoniously when played.
Salesperson:	Sells musical instruments, sheet music, recordings and books in a music store or department.
Singer:	Gives expression to the harmony, melody and rhythm of music by means of the human voice.
Teacher:	Instructs students in an educational institution in singing and music.
Violin Maker:	Makes handmade violins, cellos and other musical instruments of the violin family.

A Knowledge of and Ability in Drawing and Arts and Crafts May Lead to the Following Occupations:

Architect:	Plans and oversees the construction of buildings, marine projects, and other construction work.
Art Critic:	Reviews art work and writes comments for publication.
Art Editor:	Conducts a newspaper or magazine department devoted to news and criticism of art; may be in charge of the art department of a firm.
Artist:	An artist makes a living from their proficiency and creativity in painting, sculpture or illustration.
Blacksmith:	One who works with metals by heating iron and then hammering into desired form such as horseshoes, tools, etc.
Cartoonist:	Prepares cartoons for publication in a magazine or newspaper.
Commercial Decorator:	Paints designs on china, leather, pottery, wood, furniture, tinware, and other articles.
Commercial Designer:	Creates designs or patterns for commercial articles.
Costumer:	Designs and orders costumes for actors and actresses according to the characters they are to portray.
Curator:	Has charge of an art gallery, arranges pictures for display, and searches for new exhibits.
Designer:	Creates or marks out designs for clothes, furniture, machines, or other articles, or reproduces designs made by others.
Display Artist:	Designs, paints or sketches backgrounds or fixtures for use in window or interior displays.
Fashion Designer:	Creates designs and prepares patterns for new types of wearing apparel. Must have knowledge of fashion trends.

Fashion Editor:	Specializes in conducting a department of a newspaper or magazine devoted to fashions in clothes.
Engraver:	Engraves lettering or designs in printing plates or jewelry.
Interior Decorator:	Designs artistic interiors for homes, hotels, clubs, boats and motion picture arts. Knowledge of colors and designing.
Jeweler:	Designs, creates, makes and repairs articles of jewelry. Works with various metals such as silver, brass, gold, pewter. Must have a knowledge of soldering processes.
Knitter:	One who makes a living from knitting with two long needles and various yarns to make articles such as sweaters, blankets, scarfs, etc.
Layout Person:	Outlines patterns and marks shapes on textiles, sheet or structural metal, glass or leather, for subsequent cutting, punching, bending and assembling; may also be an artist who lays out the form of an advertisement.
Leathersmith:	Creates and designs leather articles. Must have knowledge of cutting, sewing and dying of leather hide.
Letterer:	Paints initials, monograms, company names or does other lettering work.
Macrame Crafts Person:	The art of creating things such as jewelry, wall hangings, pot hangings, etc., tying various kinds of knots.
Model:	Poses for artists and photographers or models clothing for buyers.
Painter:	Performs all types of painting work. Must be very accurate and have knowledge of colors, mixing paints and design.
Photoengraver:	Prepares copper or zinc plates to be used in printing.

Photographer:	Takes photographs of persons, scenes or things, artis ic and creative ability.
Portrait Painter:	Paints a likeness of a person, usually in oil, charcoal or water color, on a canvas.
Potter:	Designs creations from clay. Knowledge of various methods of making, "firing" and glazing the clay.
Sculptor:	Models statues in clay or wax and then chisels out statues from marble or stone; artistic and creative ability.
Sign Painter:	Designs, lays out and paints signs, usually for commercial use.
Silversmith:	Craftsperson who creates, designs and repairs sterling silver jewelry. Must have knowledge of soldering and polishing techniques.
Stylist:	Advises advertising, display and merchandising departments on what general merchandise to feature or purchase.
Teacher:	Instructs students in an educational institution in art courses.
Window Trimmer:	Arranges displays of store merchandise in store windows or showcases.
Wood Carver:	Decorates furniture or other wooden parts by carving ornamental designs in the wood with hand tools.

Foreign Language

Of all the subjects taught in the schools, foreign language is at first glance perhaps the least likely to relate to career education infusion in the classroom. After all, few of us every use our knowledge of foreign languages in our daily work. Our country is so large, and so far removed from most of the foreign world, that we rarely even hear a foreign language spoken.

Nevertheless, there are a number of reasons why foreign language study is important to young people planning their careers and why a career component of foreign language instruction should be encouraged. First, of course, is the fact that many colleges and universities have foreign language requirements, making successful learning of a language a career prerequisite for a large number of high school graduates. Second, there are many careers in which foreign languages are used, and a few in which bilingual ability is the central job skill required (see the list below).

In addition, a number of recent economic and political developments suggest the importance of foreign language study, especially Spanish and French: (1) There is increasing immigration to mainland United States from Puerto Rico and from Central and South America. As a result, Spanish-speaking people are in closer contact with English-speaking people in more communities, schools and places of work. (2) Americans are traveling to foreign countries more than ever before, spurred by reduced air fares and increased leisure time. (3) American business investments in foreign countries are increasing, as are foreign investments here, and as a result there are increasing opportunities for Americans to be employed in both the public and the private sector to come into contact with foreign nationals. Of course, for many foreigners, English has become a second language and is used comfortably in both business transactions and social situations. Nevertheless, Americans who can read, write and speak a foreign language are at a clear advantage in communicating with foreign nationals, even in English.

The far more important reason for studying a foreign language has always been, and will remain, a cultural one. Through learning and using a language, students begin to appreciate the society and heritage of the lands in which that language is spoken. In a language class, as perhaps nowhere else in American public education, young people come in contact with people different from themselves, with values different from their values, and with a history that enriches their understanding of American history. In these ways the study of a foreign language can be considered essential to the development of self-awareness in a social context. A language teacher who can use his or her subject to enhance self-awareness will have addressed the basic element of career development and will have succeeded in making school relevant to the concerns of young people.

The activities suggested below should be taken as ideas for curriculum enrichment. In no way can career infusion in foreign languages be a substitute for instruction in the basics: grammar,

pronunciation, reading of literature, composition, and so forth. Career infusion activities merely offer a chance to vary the teaching techniques, change the pace of instruction and perhaps motivate some students not inspired by the language itself.

Examples of Classroom Activities in Career-Oriented Foreign Languages:

1. Self-Awareness

   Have students describe the foreign language and culture in their own family heritage.

   Have students visit various foreign restaurants and request menus. The home economics teacher might be invited in to discuss foods found on foreign menus and other representative meals. Follow up by a foreign foods "lab" in which native meals are prepared by home economics and foreign language students.

   Ask a foreign national to address the class on learning English as a second language.

   Have a representative of an arts museum discuss some contributions of artists (from the appropriate culture) to international art, as well as the use of said language in his/her job.

   Have students make a presentation to elementary school students on the culture of the foreign country and its language.

2. Educational Awareness

   Have students work with elementary students who are learning English as a second language. Each student will keep a journal of the elementary school student's progress.

   Have students research the opportunities for post-secondary education in the foreign language being taught; identify local colleges which teach the language.

   Have students compare several methods of instruction in foreign languages.

3. Career Awareness

   Have a bilingual secretary speak to the class on his/her own use of two or more languages in business.

   Have students listen to a radio station which broadcasts a foreign language program. Follow up by a visit from a local TV or radio station worker who is involved in foreign language programming.

   Have a reporter from the Globe or Herald address the class

on the job of an international correspondent, and the importance of knowledge in a foreign language to his/her career.

Have a representative from U. S. Customs address the class on his/her job and the benefits of knowledge of foreign language in international travel.

Have a member of a locally-based embassy address the class on the diplomatic service.

Have a Peace Corps representative discuss the organization's role in foreign countries.

Have an airline representative address the class on careers related to air transportation which require facility in more than one language.

Have students identify local workers who use a foreign language. Each student will observe (shadow) that worker for a day. A report will be given to the class on the various experiences.

Have a travel agent address the class on the use of foreign languages in the leisure and recreation fields.

4. Economic Awareness

Have a representative from the local employment service (DES) office to discuss the need for people in various jobs with second language facility.

Have a representative from a fasion department store discuss the influence of various countries on fashion trends.

Have students research the process of "naturalization" of immigrants.

Have students research some import-export businesses and invite a representative from an import-export business to address the class.

Have students identify major American imports from the country whose language is being studied.

5. Decision Making

Have each student research a career of personal interest which required second language knowledge. Students may interview representative workers in their chosen field.

Have students write letters to a company engaged in an import-export business to find out about job opportunities within that company (i.e. Coca Cola, Gerber Foods).

After students have researched careers using foreign language, have them discuss these as a class, sharing what criteria they used for making their choice.

Plan a field trip, overnight if necessary, to a foreign-language speaking area (e.g. Montreal, North End Boston, or a Spanish-speaking community).

6. Beginning Competency

Have students write a newspaper story or an advertisement in the foreign language. They will examine foreign newspapers and magazines for ideas.

Have students write a travel brochure on a tourist attraction in a foreign country in the appropriate foreign language.

7. Employability Skills

Have students role play job interviews in the foreign language.

Translate a job application form into the foreign language being studied and have students fill it out.

Have each class member write a resume in a foreign language.

Ask each student to find and read the help wanted ads in a foreign newspaper.

8. Attitudes and Appreciations

Ask each student to consider the possibility of working in another country and to compare work in America with work in the country whose language is being studied: pay, major types of work available, working conditions, etc.

Assign for reading some foreign language literary or newspaper excerpts describing conditions of work and attitudes of the workers.

Discuss the possible difficulties facing a worker who is not fluent in the language spoken on the job.

A Knowledge of and Ability in Foreign Languages May Lead to the Following Occupations:

Buyer:	Purchases merchandise in quantity and assigns selling price to goods. Must have knowledge of societies' style trends.

AND
VOCATIONAL
SCHOOL DANCE

Customs Inspector:	Exercise direct supervision over all vessels coming into the district and boards vessels from foreign ports to inspect and search them in order to determine the nature of their cargoes.
Foreign Clerk:	Examines all records pertaining to merchandise received from and shipped to foreign countries.
Foreign Collection Clerk:	Handles the collection of foreign accounts and calculates rates of foreign exchange.
Foreign Correspondent:	Reports news stories in a foreign country and sends them to another country for publication.
Foreign Exchange Clerk:	Purchases, sells or handles bills, letters of credit or drafts drawn on foreign banks.
Foreign Service Worker:	Employed by State Department or other government agencies for work in other countries.
Immigration Inspector:	Examines persons seeking entry into the United States to determine their citizenship status.
Interpreter:	Translates spoken or written passages of a foreign language into English or some other specified language.
Singer:	Gives expression to the harmony, melody and rhythm of music by means of the human voice.
Teacher:	Instructs students in an educational institute in foreign language courses.
Translator:	Translates thoughts or meanings of written or printed words into a different language.

APPENDIX A

COORDINATING SCHOOL SUBJECTS AND OCCUPATIONAL CLUSTERS

Career infusion, to make sense in the framework of school instruction, must be organized to provide a match between school subjects and occupational areas. Someone with an overview of instruction -- a principal, a guidance counselor, an instructional coordinator -- should be integrally involved in developing such a match for a particular school. Knowing what is taught and by whom, this person can develop a chart similar to that on the following page to indicate which career clusters will be infused into each curriculum component.

A chart of this kind should, to the extent possible, be developed in consultation with the people involved, both teachers and community resource people. As it is put to use, it will tend to evolve, with some new boxes being filled in and some x's dropped. These changes should be encouraged, since they show that the program is developing according to the skills, interest and energy of the teachers conducting it.

Another valuable resource in planning and implementing career infusion is the actual list of occupational titles. There are now some thirty thousand titles listed in a Dictionary of Occupational Titles published by the federal government. However, the abbreviated list presented in Figure 2 will likely be far more useful. It contains for each school subject some representative occupations with a brief description of the subject-related skills used by workers in those careers.

NOTE: The United States Office of Education (USOE) has designed fifteen broad categories called the "Fifteen Occupational Clusters" as a system for classifying the myriad of existing occupations. Clusters are listed on the left side of the page and are cross-referenced with the standard subject offerings of the high school curriculum.

FIGURE 2

RELATION OF SCHOOL SUBJECTS AND USOE CAREER CLUSTERS

CLUSTERS	Science	Mathematics	English/ Communications	Social Science	Foreign Language	Music & Art
Agri-Business National Resources	X	X	X			
Business/Office		X	X		X	
Communications and Media	X		X	X	X	X
Construction	X	X	X			X
Consumer and Home-making Education			X	X		
Environment	X		X			
Fine Arts and Humanities	X	X	X	X	X	X
Health	X		X	X		
Hospitality and Recreation		X	X	X	X	X
Manufacturing	X	X	X	X		X
Marketing and Distribution		X	X	X	X	
Personal Services		X	X	X		
Public Services	X	X	X	X	X	
Transportation	X	X	X		X	
Marine Science	X		X			

SEE NOTE ON PREVIOUS PAGE.

APPENDIX B

PERFORMANCE GOALS FOR CAREER EDUCATION
MASSACHUSETTS STATE TASK FORCE ON CAREER EDUCATION[1]
1977-1978

Component: Self Awareness

Goal: Students will become aware of their own aptitudes, abilities, and values and will relate this knowledge to possible career and life roles.

Subgoals: Students will be provided with opportunities to understand, accept, and respect their own uniqueness in relationship to others and the environment (K-12).

Students will be provided with opportunities to explore their abilities and limitations at their present maturity level and where appropriate relate this knowledge to possible life and career roles (K-12).

Students will be provided with opportunities to explore their interests and values at their present maturity level and where appropriate relate this knowledge to possible life and career roles (K-12).

Home-school-community collaboration will be developed, maintained and enhanced to help students acquire behaviors which demonstrate an understanding and acceptance of self in relation to possible career and life roles.

Component: Attitudes and Appreciations

Goal: Students will develop an appreciation of and positive attitudes toward possible career and life roles.

Subgoals: Students will developmentally progress in their appreciation of work and continued learning.

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[1]Based upon the Massachusetts State Plan for Career Education. Implementation of the Plan at the State level is contingent upon future appropriations of federal funds under the Career Education Incentive Act (P.L. 95-207). LEA's are free to delete, adapt, or add to objectives and operational plans as they develop their local plans for career education. The means for obtaining their objectives and the criteria for evaluation will be defined at the local level.

Students will understand role of leisure and arts in achieving self-satisfaction (K-12).

Students will recognize and value good work habits (K-12).

Students will understand the necessity and importance of all types of paid and unpaid work (K-12).

Students will recognize the relationship between various attitudes toward work and job success and/or satisfaction (K-12).

Students will value and understand individual differences such as sex, race, cultural and ethnic backgrounds, yet become aware of how stereotyping based upon such individual differences affects career and life roles (K-12).

School-home-community collaborative efforts will be developed and maintained to aid students in acquiring behaviors which demonstrate an appreciation of and positive attitudes toward possible career and life roles.

Component: Career Awareness

Goal: Students will become aware of a broad range of occupations and career patterns available to them.

Subgoals: Students will become aware of the variety of occupations to be found in the world of work.

Students will understand the manner in which occupations relate to the needs and functions of society (K-12).

Students will understand the relationships between career and life styles (K-12).

Students will become aware of the legal rights, benefits, and obligations associated with different kinds of occupations (7-12).

Home-school-community collaboration will be developed, maintained and enhanced to help students acquire behaviors which demonstrate an understanding and acceptance of self in relation to possible career and life roles.

APPENDIX B (Continued)

Component: Educational Awareness

Goal: Students will become aware of the relationship between education and career and life roles.

Subgoals: Students will become aware of the relationship between education and career and life roles.

Students will become aware of the training and education needed for different occupations.

Students will be able to relate what they learn in school to different jobs and occupations.

Students will seek to expand their educational experiences as a means to further their life and career roles.

Students will become aware that education occurs both in and outside formal school system and continues for life.

Home-school-community collaboration will be developed, maintained and enhanced to help students acquire behaviors which demonstrate an understanding and acceptance of self in relation to possible career and life roles.

Component: Economic Awareness

Goal: Students will become aware of economic pressures and how they relate to personal and societal goals, decisions, and actions.

Subgoals: Students will become aware of problem solving techniques and work process (K-12).

Students will become aware of how the international and national economic systems work (7-12).

Students will acquire basic "consumer skills" (7-12).

Students will become aware of the impact of changing technology on jobs.

Home-school-community collaboration will be developed, maintained and enhanced to help students acquire behaviors which demonstrate an awareness of economic processes and how they impact on personal and societal goals, decisions, and actions.

APPENDIX B (Continued)

Component: Basic Competencies

Goal: Students will become competent in basic skills generally useful for work.

Subgoals: Students will develop communication skills including reading, writing and speaking useful for work.

Students will develop computational skills useful for work.

Students will develop manual perception skills, including basic tool utilization useful for work.

Home-school-community collaboration will be developed, maintained and enhanced to help students acquire behaviors which demonstrate competency in basic skills.

Component: Employability Skills

Goal: Students will develop employment skills applicable to their developing career pattern.

Subgoals: Students will recognize the implications of working with or without supervision, independently and with others (K-12).

Students will develop human relations skills which will help in getting, holding a job and advancing in a career pattern (7-12).

Students will develop job competencies for groups of related occupations (7-12).

Students will develop employment seeking skills (7-12).

Home-school-community collaboration will be developed, maintained and enhanced to help students acquire employment skills applicable to their developing career pattern.

Component: Decision-Making

Goal: Students will understand that decision-making includes responsible action in identifying alternatives, selecting the alternative most consistent with their goals, and taking steps to implement a course of action.

APPENDIX B (Continued)

Subgoals:

Students will become aware of the steps involved in the process of rational decision-making (K-12).

Students will develop skills in gathering information and applying it to the career planning process (7-12).

Students will learn to apply the decision-making process to the choosing of a possible career and life role (7-12).

Students will become aware of the need to accept responsibility for their decisions (7-12).

Students will become aware that career planning is a lifelong process (K-12).

Home-school-community collaboration will be developed, maintained and enhanced to help students acquire decision-making skills.

ANNOTATED BIBLIOGRAPHY

The following publications, journals and media materials have been selected from thousands of career education materials now available for their usefulness to teachers, either as background reading, as classroom resources or as references. They represent a wide range of educational perspectives, from traditional to alternati progressive, and should be considered accordingly.

The entries below are arranged according to the eight caree education categories used throughout this book. Materials of general interest to career educators are listed first.

GENERAL INTEREST

- Career Education, U. S. Department of Health, Education and Welfare, Washington, D. C.: U. S. Government Printing Office, 1972, $.20.

  An excellent, brief, inexpensive explanation of the very basic concepts of career education. Most useful for community groups and those who need only the briefest explanation (background).

- Career Education Survival Manual: A Guidebook for Career Educators and Their Friends, Larry McClure. Salt Lake City: Olympus Publishing Company, 1975.

  A general overview of the field, underlining significant current concepts and issues. Illustrated with humorous cartoons, it contains an excellent bibliography and list of helpful organizations (background).

- Career Education: What It Is and How To Do It, Kenneth Hoyt, Rupert Evans, Edward Mackin, and Garth Mangum. Salt Lake City: Olympus Publishing Company, 1972.

  One of the very first comprehensive explanations of career education, this practically-oriented text quickly became the "standard" reference in the early days of career education. Still up to date, it offers practical suggestions for program planners, and some general guidelines for teachers (background).

- Community Is The Teacher, National Institute of Education, Washington, D. C., 1976. (no cost)

  A description of four model career education programs at the secondary level using the community as a resource, including comments of student, parent and community participants (background).

. Journal of Career Education. Columbia: University of Missouri. ($8.00 per year)

A monthly publication containing professional articles and addressing current issues in the field (background).

CAREER EDUCATION ELEMENTS

1. *Self-Awareness*

. Born to Win, James Muriel and Dorothy Jongeward. Reading, MA: Addison-Wesley Publishing Co., 1977. (paperback)

Uses transactional analysis to show the reader hidden strengths and help integrate them to build self-confidence (classroom resource).

. Values Clarification, Sid Simon, Leland Howe, Howard Kirschenbaum. New York: Hart Publishing Co., 1972.

A compendium of seventy-nine classroom strategies for self-awareness (classroom resource).

. Youth: Transition to Adulthood, Report of the Panel on Youth of the President's Science Advisory Committee, James S. Coleman, Chairman. Washington, D. C.: Government Printing Office, 1973.

The report of a national panel on the changing social roles of youth in school, in the family and at work (background).

2. *Educational Awareness*

. The Boundless Resource, Willard Wirtz. Washington, D. C.: New Republic Book Company, 1976.

A former cabinet official looks at the underemployment of youth and suggests ways in which education may become more closely related to work (background).

. Education and Jobs, Ivar Berg. Boston: Beacon Press, 1971.

A critical analysis of the use of educational credentials to hire and promote; Berg argues that employers are underutilizing highly trained labor (background).

. Guidance Information System, Time Share/Houghton Mifflin. West Hartford, CT.

A computerized guidance information system with national data on colleges and jobs (reference).

. Work, Learning and the American Future, James O'Toole. San Francisco: Josey-Bass, 1977.

A futurist's look at the relationship between education and work, written by a social scientist to highlight key policy issues for the layman (background).

3. *Career Awareness*

. Careers in Focus, Charles Winn, Editor. New YOrk: McGraw-Hill, 1976.

A series of readings in workbook format and related AV materials describing career opportunities by cluster at a secondary reading level (classroom resource).

. Dictionary of Occupational Titles, U. S. Department of Labor. Washington, D. C.: U. S. Government Printing Office. (Revised 1977)

The best national listing of job titles, descriptions and requirements, newly revised to eliminate sex-role stereotyping (reference).

. Massachusetts Occupational Information System, Sixty William Street, Wellesley Hills, MA 02181.

A computerized data bank designed to encourage student use in conjunction with a career guidance program (classroom resource).

. Occupational Briefs, Occupational Outlook Handbook, and
. Occupational Outlook Quarterly, U. S. Department of Labor, Washington, D. C.: U. S. Government Printing Office. (Revised regularly).

Short job descriptions necessary to an understanding of the changing labor market (reference, classroom resource).

. Yellow Pages of Learning Resources. Cambridge: MIT Press, 1972.
. Yellow Pages Career Library, National Association of Secondary School School Principals, Arlington, VA, 1974.

A series of well-designed booklets for teacher or student use, providing a personal and social perspective on a number of common occupations.

ANNOTATED BIBLIOGRAPHY (continued)

4. *Economic Awareness*

. Dollars and Sense, 324 Somerville Ave., Somerville, MA 02148 (monthly).

A short periodical presenting economic information and viewpoints in a readable form (background, classroom resource).

. Economics and the Public Purpose, John Kenneth Galbraith. Boston: Houghton Mifflin Company, 1973.

One of a number of economics books written for the general public by this author, containing a discussion of large corporations, small business and government as economic forces (background).

. Sylvia Porter's Money Book, Sylvia Porter, New York: Doubleday, 1973.

A how-to-do-it book about earning, saving, spending, borrowing and investing money (classroom resource).

. Why Do We Spend So Much Money. Somerville, MA: Popular Economics Press, 1973.

A short, readable, critical booklet on rising prices and related consumer issues (classroom resource).

. Work in America, Report of a Special Task Force to the Secretary of Health, Education and Welfare, James O'Toole, Editor. Cambridge: MIT Press, 1973.

A government commission report on changes in employment and the need for more meaningful jobs (background).

5. *Decision Making*

. The Art of Developing a Career, Friel et. al., 1974. Human Resource Development Press, Amherst, MA.

A workbook-style text for helping students explore careers, make decisions and plan tentative career paths (classroom resource).

6. *Beginning Competency*

. Career Education Activities for Subject Area Teachers, Cambridge: Abt Publications, 1975.

A curriculum guide and classroom activities, divided by grade level and subject area; each activity is experience-based and relates subject competencies to career applications (classroom resource).

. The Job Ahead, Herman Goldberg and Bernard Greenberger, Chicago: SRA, 1977.

A career reading series, relating occupational and social skills through fictionalized but realistic character studies and situations; the series includes forty stories at three reading levels along with various exercises and resource books (classroom resource).

7. *Employability Skills*

. Career Core Competencies, Edwin Harr, Editor. New York: McGraw-Hill, 1977.

A series of workbook-style readings and related AV materials and written exercises in job readiness skills including communications, getting a job and human relations (classroom resource).

. Getajob, Robert Carkhuff, et. al., Amherst, MA: Human Resource Development Press, 1975.

A workbook-style text to teach the basic skills of resume writing, job finding, interviewing and other techniques in securing a job (classroom resource).

. Career Workbook, Ted Elsberg. New York: Fairchild Publications, 1975.

Fifty problems for the secondary student getting ready to enter the work force, presented with minimum text and plenty of room for student input (classroom resource).

. The Human Side of Work, Jack Hruska and Walter Popper, Amherst, MA: University of Massachusetts, 1974.

A curriculum guide and classroom activities for secondary career education groups, including sections on women's and men's roles, job ethics, getting along on the job (classroom resource).

8. *Attitudes and Appreciations*

. Working, Studs Terkel, New York: Pantheon, 1974.

A brilliant series of interviews with working people, in which employers, and self-employed men and women talk about their feelings, hopes and fears related to working (background, classroom resource).

INSTITUTE FOR GOVERNMENTAL SERVICES

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The Institute for Governmental Services was founded by the President of the University of Massachusetts and its trustees in 1970 as an expression of the University's historical commitment to public service. The Institute was charged with six goals: (1) to link the University and the State and local government agencies throughout the Commonwealth; (2) to facilitate the flow of resources from all three campuses of the University to the citizens of the Commonwealth; (3) to design, carry out, and refine University-based, service-oriented programs for State and local colleges and campuses within the University; (4) to collaborate with the Institute and with each other in developing service-oriented programs; (5) to identify and obtain financial support from appropriate sources; and (6) to establish a wide variety of organizations including State and local governmental agencies, other institutions of higher learning, business and industrial concerns, citizens groups, and professional organizations.

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